CONTRACTOR QUALITY CONTROL PLAN

For

JORGENSON FORGE EARLY ACTION AREA REMEDIATION PROJECT

CONTRACT NO. XXXXX

JORGENSON FORGE CORPORATION

SEATTLE, WASHINGTON

August 7, 2013

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1. Objective

Envirocon has developed this Contractor Quality Control (CQC) Plan in accordance with Specification Section 014500 for the Jorgenson Forge Early Action Area Remediation Project at the Jorgenson Forge Corporation in Seattle, Washington. This document establishes the Quality Control System for Envirocon, Inc. (Envirocon) to provide the necessary supervision, controls, and testing of all items of work, including that of suppliers and subcontractors, that will ensure the compliance with Contract Specifications and Design Drawings. This includes contractor-furnished equipment, materials, workmanship, construction, finish, functional performance, and identification.

Project Background and Scope

Jorgensen Forge is an operating facility that manufactures precision machine forgings from material grades that include carbon, steel, aluminum, titanium, and nickel based alloys. The facility has been operated by the Jorgensen Forge Corporation (Jorgensen Forge) since 1992 and was previously managed by the Earl M. Jorgensen Corporation (EMJ) from 1965 to 1992. In 1992, the United States Environmental Protection Agency (USEPA) placed the Lower Duwamish Waterway on the National Priorities List (NPL) and the Jorgensen Forge shoreline was included. Sampling activities to determine the extents of impacted sediments began in 2003. The results of the investigations concluded shoreline and bank soil and sediment along the Jorgensen Forge property contained elevated concentrations of PCBs that present a risk to human health. A final Engineering Evaluation/Corrective Action was approved by the USEPA in 2011 leading to the preparation of a Basis of Design Report for the Jorgensen Forge Early Action Area in March 2013 by Anchor QEA, LLC. (Anchor) on behalf of EMJ and Jorgensen Forge. A Bid Specification package and Design Drawings for the Early Action Area Remedial Action were prepared by Anchor and Envirocon was solicited to provide a proposal for completing the removal action.

Construction activities planned as part of the cleanup include in-water dredging, placement of in-water backfill and shoreline materials, reconfiguring the shoreline bank, and transport and off-site disposal of impacted sediments and soils.

The scope of work for the Project consists of the following elements:

- Demolition Activities: Shoreline demolition activities are required to excavate impacted bank soil. Demolition activities include removal of the current property fence along the shoreline; cutting back, when necessary, and grouting eight stormwater outfalls; abandonment of one monitoring well; removal of miscellaneous bank debris including concrete, brick, wood, and slag; and removal of wooden piers.

- Upland Excavation and Backfill: Excavation of upland areas and subsequent backfill of areas adjacent to the Lower Duwamish Waterway.
- In-Water Dredging Areas: Dredging of sediments and subsequent backfilling in the Lower Duwamish Waterway.
- Bank Excavation and Backfill: Excavation of soil from the bank and subsequent backfilling of the bank of the Lower Duwamish Waterway.
- Water Management: Water Management and continuous treatment of dredge water and other water related construction activities.

The construction work will be performed by Envirocon under contract to Anchor QEA, LLC (Anchor) and oversight will be performed by Anchor acting as the Engineer.

2. Quality Assurance/Quality Control Program

Introduction

Envirocon strives to obtain a uniform, high quality level of workmanship throughout all phases of procurement, fabrication, construction, and installation of equipment and facilities through the utilization of a Quality Control System, to assure to this end, the following principles will be observed:

- Assure the highest quality by maintaining supervised controls and written instructions governing quality control procedures and practices and establishing clearly defined responsibility and authority for compliance;
- Conform to all contractual requirements, specifications, applicable standards and the Envirocon Quality Control Plan;
- Compile accurate records of test certifications and other required documentation;
- Notify Project Management and the Engineer of quality discrepancies for immediate corrective action. Assure that corrective action is implemented properly.

Quality Assurance/Quality Control Program Overview

Responsibility for project Quality Assurance/Quality Control (QA/QC) remains a line management function. Envirocon's Corporate Quality Assurance/Quality Control Officer (CQAO) is responsible for the overall and ongoing development of the QA/QC Program. These responsibilities include:

- Coordinating the development and the updating of the QA/QC program.
- Hiring, developing, and managing of Project Engineers to perform QC duties on Envirocon projects.
- Assisting project management with developing/implementing training as necessary for QC. duties on Envirocon projects.
- Auditing projects for compliance with designated QC procedures.

Envirocon Project Engineers or Construction QC (CQC) Managers are responsible for following/implementing designated QC procedures in the field and reporting discrepancies to management. These personnel report to the Site Project Manager, who is responsible for ensuring technical consistency among these personnel.

Quality Management System

The Quality Management System is organized to prevent confusion in the lines of authority and avoid assigning personnel conflicting responsibilities. The CQAO is responsible for implementing and overseeing the QA program. The CQAO and the designated project QA representative(s) are authorized to stop work if QA objectives are not being achieved.

Standard Operating Procedures

Written protocols, standard operating procedures (SOPs), and other control measures are used to ensure work is performed to established technical standards. Envirocon implements a three-phase quality control system (preparatory, initial, and final) during execution of our project work. Field instrumentation is maintained and calibrated in accordance with established Envirocon protocols.

Construction Practices

The QA/QC Program establishes controls to ensure the construction practices will be accurate and will convey specifications, drawings, procedures, and work instructions.

Procurement

Envirocon's procurement control system ensures materials and services meet the specification requirements, are suitable for their intended use, and are received and maintained in good condition prior to use.

Inspections, Tests, and Assessments

Acceptance inspections and tests of specified items, services, and processes are conducted using established acceptance and performance criteria. All routine inspections and acceptance inspections or tests are formally documented and submitted as required. Assessments are conducted to measure service quality, adequacy of work performed, and to identify areas for improvement.

Documents and Records

Envirocon utilizes centralized corporate document controls to ensure that documents and records will be controlled, protected, maintained, and submitted according to contract specifications.

Quality Improvement

The Envirocon team consists of qualified experts driven to improve the quality of our services. Management encourages employees to continuously evaluate procedures, systems, and controls for continuous improvement.

3. Organization

Contractor Quality Control (CQC) Manager

Envirocon's CQC Manager for this project is Byron Kelly. The CQC Manager will report and receive his authority directly from the Project Director. Envirocon's Construction Manager, will serve as the alternate CQC Manager and receives his authority also from the Project Director.

The CQC Manager will formulate and implement, as required, the written procedures and instructions contained in this plan. Actual practices are not limited to this plan and where a discrepancy exists between this plan and the contract requirements, the contract requirements will prevail. The CQC Manager's duties will include the following:

- Assure compliance with the quality control requirements of the contract.
- Coordinates the quality control efforts of subcontractors and suppliers to correspond to the overall CQC Plan.
- Provide direct feedback and advise the Owner representative regarding the effectiveness and capability of the quality control organization.
- Review and coordinate submittals and approvals of contract furnished materials and corresponding tests. Perform follow-ups of subcontractor's work as required.
- Ensure all work complies with the contract plans and specifications.

Envirocon has attached copies of the following letters:

- Exhibit C-1: Envirocon's quality control personnel's resumes, QC certifications, and Project Specific Organizational chart.

Contractor's Other Personnel

Other contractor's personnel such as superintendents, engineers, and QC technicians will carry out quality control functions, all of whom will be physically on the job-site for the duration of the contract work.

In addition, each primary subcontractor will have a QC representative on site. The QC personnel will assist the CQC Manager as required in order to fully implement the Quality Control Plan. Refer to the flow chart in Exhibit C-2 for the Quality Control Team.

Envirocon's Standards of Quality are attached as Exhibit C-3.

Lower-tier subcontractors that l will assist the CQC Manager is as follows:

Commercial Testing Firms – Envirocon will perform analytical testing of backfill materials to be utilized from the approved third party commercial testing laboratory, Analytical Resources, Inc. in Tukwila, Washington, for compliance with the specifications. For the any geotechnical testing identified for this project, water quality monitoring, or additional chemical analysis of backfill after initial approval for use, monitoring and testing will be coordinated directly by the Owner. Envirocon will support this coordination through the Quality Management System to ensure consistency such that performance specifications are achieved and documented.

Subcontractors – Envirocon is teaming with two notable firms to support execution of the work on the Jorgenson Forge Early Action Area Remediation Project in Seattle, WA.

- Quigg Bros. Inc of Aberdeen, Washington will provide marine construction and dredging support and;
- eTrac Engineering, Inc. of San Rafael, California will provides high quality custom integrated services and products to provide dredge positioning and hydrographic surveying services.
- Land based surveying contractor to be determined.

4. Procedures

Control of Onsite Construction

The CQC Manager will perform sufficient control phases and test of all work including the work of subcontractors, to ensure conformance to applicable specifications and drawings with respect to materials, workmanship, construction, functional performance, and identification. Also, the CQC Manager will be responsible for the maintenance and accuracy of the record drawings (as built). The QC organization will perform at least three phases of control for all definable features of work as follows:

Preparatory Phase

This phase will be performed prior to beginning each definable feature of work and includes:

- Review Contract Requirements.
- Check to assure that all materials and/or equipment are on hand and have been tested, submitted, and approved as required.
- Check to assure that provisions have been made to provide the required control inspection and testing.
- Examine work area to assure that all preliminary work has been accomplished.
- Review activity hazard analysis when necessary.

- Discuss procedures for controlling quality of the work including repetitive deficiencies.
- Document construction tolerances and workmanship standards for that feature of work.
- Check to ensure that the portion of the plan for the work to be performed has been accepted by the Owner.
- Discuss the initial control phase.

A sample outline of the preparatory phase inspection meeting is attached as Exhibit C-4.

Initial Phase

This phase will be performed at the time when beginning each definable feature of work and includes:

- Check preliminary work and review minutes of the preparatory meeting.
- Check new work for compliance with contract documents.
- Verify required control inspection and testing.
- Establish level of workmanship.
- Resolve all differences.
- Check for use of defective or damaged materials.
- Check for omissions and resolve any differences with the Owner
- General check of dimensional requirements.
- Check safety compliance.

A sample outline of the initial phase inspection meeting is attached as Exhibit C-4.

Follow-up Phase

This phase will include periodic checks performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks will be made a matter of record in the CQC documentation. Final follow-up checks will be conducted and all deficiencies corrected prior to the start of additional features of work that may be affected by the deficient work. Envirocon will not build upon nor conceal non-conforming work.

Receiving and Warehousing

Inspection of permanent construction materials received will be performed by the CQC Manager, or other contract personnel. Visual inspection will include the identification of the material, damage, quantity and completeness evidence of compliance with approvals, and proper documentation.

Results of receiving inspection will be reported on an appropriate report form as further identified in Section 6.

Offsite Control

In order to assure that all requirements of the contract plans and specifications are met and maintained and to assure the delivery of quality products, all suppliers will be required to submit certificates of compliance, test data, or other supporting documents that are required by the Contract documents to demonstrate compliance. Suppliers will be notified of any deficiencies, and will be required to submit additional information.

Documentation

The CQC Manager will maintain current records of all control activities and tests. This will include factual evidence that the required control phases and tests have been performed and proposed remedial action for any defective or rejected materials. Records will cover both conforming and defective features and they will include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the Contract. Legible copies of these records on an appropriate form will be furnished to the Owner on a daily basis.

Submittal Management Procedures

Envirocon will use the submittal register to schedule and track the progress of submittals for this project. The submittal register will be updated on a weekly basis by the CQC Manager. New submittals will be numbered in ascending numerical order (e.g. 001, 002, 003, etc.) as required by each Specification and resubmittals will be designated using the original submittal number followed by the revision number (e.g. 001.1, 001.2, 001.3, etc.).

Drawings and Document Control

Contract drawings, work orders, and change orders issued for construction will also be issued to the CQC Manager. It is the responsibility of the CQC Manager to maintain this technical information and keep it current and recorded as it is revised. No technical information will be replaced or revised without receipt of properly authorized change notice, revision, or equal.

Materials Certification

Copies of all purchase orders or subcontracts requiring receiving inspection will be given to the CQC Manager for receiving and record purposes. When the purchase order requires vendor certification of materials, equipment, or supplies, such certification will be verified as to accuracy and conformance and may be used in lieu of test for those properties covered by the certification. Copies of all certifications received will be maintained by the CQC Manager, and they will be available to the Owner upon request or submitted if required by the specifications.

Workmanship Inspection

Each subsequent phase of construction will be inspected by the CQC Manager such that areas that will built upon (or embedded as result of construction of a subsequent work task) are inspected for conformance prior to initiating the subsequent work task. The CQC Manager will verify by signature that all items installed are in accordance with the contract plans and specifications prior to placement or construction of the subsequent work task. Any corrective action required will be recorded.

Calibration of Equipment

All contractor or subcontractor furnished measuring and test equipment shall be calibrated and maintained to traceable industry standards. Records of these calibration certifications will be maintained by the Quality Control department and made available upon request.

- Each instrument will be plainly and permanently numbered, the equipment will be operated only by those persons directly responsible for the equipment or personnel under their cognizance.
- Each piece of equipment will be checked for accuracy as recommended by the manufacturer for frequency of calibration. Required calibration of measuring and test equipment will be conducted by a certified laboratory.
- Measuring and test equipment dropped, damaged, or believed to be inaccurate will be removed from service and recalibrated.

Punch Out Inspection

Near the completion of all work or any increment thereof established by a completion time as stated in the Contract Documents, the CQC Manager will conduct an inspection of the work and the develop a punch list of items which do not conform to the approved drawings and specifications. Such a list of deficiencies will be included in the CQC documentation and will include the estimated date by which the deficiencies will be corrected. The CQC Manager or staff will make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, Envirocon will notify the Owner that the project is ready for the Owner Pre-Final inspection.

Pre-Final Inspection

The Owner will perform this inspection to verify that the project is complete and ready to be occupied. An Owner Pre-Final Punch List may be developed as a result of this inspection. The Envirocon CQC Manager will ensure that all items on this list have been corrected before notifying the Owner so that a Final inspection can be scheduled. Any items noted on the Pre-Final inspection will be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph will be

accomplished within the time slated for completion of the entire work or any particular increment thereof of the project is divided into increments by separate completion dates.

Final Inspection

Envirocon's Quality Control Inspection personnel, including the superintendent or other primary management person and the Owner's Representative will be in attendance at this inspection. The final acceptance inspection will be formally scheduled by the Owner based upon notice from Envirocon. Notice will be given to the Owner at least 14 days prior to the final acceptance inspection and shall include Envirocon's assurance that all specific items previously identified to Envirocon as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. The general requirement of final acceptance will include, but no limited to, the following:

- General appearance
- Workmanship
- Cleanliness of areas and equipment
- Removal of unused material and temporary facilities
- Restoration of all site perimeter fencing impacted by Envirocon's work
- Condition of job files and completion of project documentation

Revision Policy

Activities, programs, and procedures not covered in this Quality Control Plan or proposals or additions to these standards, shall be discussed at meetings held for that purpose at such times and places the Quality Control System Manager may select, and shall take such action to request acceptance from the Owner to incorporate such revisions as deemed necessary. A record shall be kept of such meetings and interested parties present, together with the subject matter reviewed. Such meetings shall be held as required by changes in the contract specifications for the purpose of reviewing the QC plan, to entertain revisions, additions, or deletions. Accepted revisions shall be incorporated in the plan as first revision, second revision, etc., a revised index page shall be included.

5. Testing Methods

All testing will be completed in accordance with the applicable section of the specifications. Field QC testing results will be submitted on the daily QC report. Off-site testing, as needed, of water and/or soil will be submitted with the daily QC report within 24 hours of Envirocon's receipt from the offsite test facility.

Attached in Exhibit C-5 is a summary of quality control tests including test name, test frequency, and person/organization responsible for each test.

6. Submittals and Recording Forms

Envirocon will complete submittals in accordance with the procedures outlined in Section 013300, Submittals. Envirocon will submit to the Owner a submittal register identifying the submittals required by the Contract documents. All submittals will be recorded on the submittal register. Envirocon will submit field test results on the daily quality control report. Envirocon will review our subcontractors and suppliers' submittals prior to submitting to the Owner. Should the Owner reject a submittal or request additional information, Envirocon will revise the submittal accordingly in a timely manner such that the schedule of the related activities is not delayed.

The CQC Manager will be utilizing the Contractors Daily Quality Control Report to document the day's quality control activities of Envirocon and all subcontractors. The daily QC report will contain notations specifically defining the phase of control on each day's activities and note compliance or non-compliance with previous phases when applicable. Also, the daily QC report will include the following items:

- Operating plant/equipment with hours worked, idle, or down for repair.
- Work performed each day, giving location, description, crew size and identification, and scheduled activity number reference.
- Quantity of materials received at the site with statements as to acceptability, storage, and reference to specifications/drawings requirements.
- Submittals reviewed, with contract reference, by whom, and action taken.
- Instructions given/received and conflicts in plans and/or specifications.

Copies of all test and inspection reports including calculation sheets will be submitted with this daily QC report. The original and one copy of the daily QC report and all attachments will be submitted to the Owner daily within 24 hours after the date covered by the report. A sample copy of the daily QC report including chain of custody form is attached as Exhibit C-6. The QC report will be signed and dated by the CQC Manager and/or his designee.

7. Quality Control Procedures

Surveillance of Subcontractor's Operations

Surveillance of the subcontractor's operations will be the responsibility of the CQC Manager. Major discrepancies will be recorded and transmitted to the related subcontractor. The CQC Manager has the authority to act directly with the subcontractor representatives on routine quality control activities. If a discrepancy is related to a work task that will be covered or embedded by a preceding operation, a resolution will be made prior to the item being covered. Major discrepancies will be followed up on a daily basis, upon correction of such a discrepancy, the date corrected and by whom.

There is one Quality Control System manager for Envirocon with support of the Project Construction Manager and Project Director. Surveillance of the subcontractors operations is the responsibility of the Quality Control System Manager. Envirocon's CQC Manager has authority to act directly with subcontractor representatives on routing quality control activities.

In addition to the Contractor's Quality Control System Manager, the dredging support and backfill contractor's superintendent and other supporting specialty contractors field supervisor will act as their quality control engineer and will be directly responsible Envirocon's CQC Manager, and the Envirocon QC support team.

Inspection Acceptance Procedure

All construction work will be completed in accordance with the contract plans and specifications. All rework or changes to the contract plans or specifications must be authorized by the Owner. All construction activities will be recorded on the daily QC report and all work in compliance with the contract plans and specifications will be noted accordingly. Control, verification, and acceptance testing procedures for each quality control test is included the *Summary of QC Tests* table attached as Exhibit C-5.

Inspection Discrepancy Procedures

Intended as an inspection system whereby all discrepancies in quality, workmanship, materials, equipment, supplies, and/or unauthorized deviations from engineering requirements on specifications can be reported and to ensure that responsible supervision personnel are notified.

- Discrepancies will be recorded on the Quality Control Daily Report form. Each discrepancy will be assigned a number by the recording Quality Control System Manager. A concise statement locating the discrepancy and description of the discrepancy will be filled in by the CQC Manager.
- When material, equipment, supplies, or workmanship, that does not conform to the contract drawings or specifications are rejected, the CQC Manager will initiate a discrepancy report and immediately furnish copies to Envirocon's Project Manager and Construction Manager and/or Subcontractor's project representative.
- The discrepancy report log will be periodically reviewed by the Project Manager with the Quality Control System Manager to formulate a disposition of each listed uncorrected discrepancy. They will establish timetables for final resolution of all discrepancies.

8. Definable Features of Construction Work

The following is a list of definable features of work (DFW):

DFW for In-Water Dredging Work:

1) Mobilization/Site Preparation
2) Temporary Mooring Pile Installation
3) Mechanical Dredging in Open Access Areas
    a) Dredging in shallow water areas (existing mud line elevation shallower than -10 feet MLLW)
    b) Dredging in deep water areas (existing mud line elevation deeper than -10 feet MLLW)
    c) Dredging in the vicinity of shoreline excavation.
4) Backfill Placement
    a) Backfill placement in toe trench and above water areas
    b) Backfill placement in sand backfill water areas
5) Navigation and Positioning System Checks for Mechanical Dredging and Backfill
6) Telemetry of Navigation, Positioning, and Dredge Data to Engineer Field Office
7) Dredged Material Barge Loading and Transport to Transload Facility
8) Design, Install, Operate on-water Dredge Water Treatment Facility
9) Water Management for Dredge Water, and Contact Water
10) Multibeam Hydrographic Surveying

DFW for Shoreline Work:

1) Mobilize/Site Preparation
2) Clearing and Grubbing/Demolition
3) Excavation of identified Upland Areas
4) Excavation of bank and shoreline area to be excavated from top of bank
5) Stockpiling and Management
6) Material Loadout
7) Stormwater Management/SWPPP Control
8) Import and Place Backfill
9) Install Fencing on the Shoreline Area